Math 9 Quiz: Sections 1.1 and 1.2 - Perfect and Non-Perfect Squares

Short Answer

1. Determine the value of $\sqrt{0.64}$.

2. Calculate the number whose square root is 4.9.

3. Which fraction is a perfect square?
   i) $\dfrac{121}{20}$
   ii) $\dfrac{121}{25}$
   iii) $\dfrac{44}{25}$
   iv) $\dfrac{11}{5}$

4. Which numbers are perfect squares?
   i) 12.25
   ii) 18
   iii) 28.9
   iv) 1.96

5. Determine the value of $\sqrt{\dfrac{98}{128}}$.

6. Name the two whole numbers whose squares are closest to 23.5.

7. Which decimal has a square root between 15 and 16?
   i) 272.3
   ii) 196
   iii) 15.5
   iv) 233.5

8. Determine the value of $\sqrt{47.2}$, to the nearest tenth.

9. The lengths of the two legs of a right triangle are 6.1 cm and 3.4 cm. Determine the length of the hypotenuse to 1 decimal place.

10. Calculate the number whose square root is $\dfrac{17}{18}$.

11. A square garden has an area of 156.25 m².
    a) Determine the length of one side of the garden.
    b) Determine the perimeter of the garden.

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12. To estimate the value of $\sqrt{151.5}$, determine the two whole number perfect squares closest to 151.5 and their square roots.
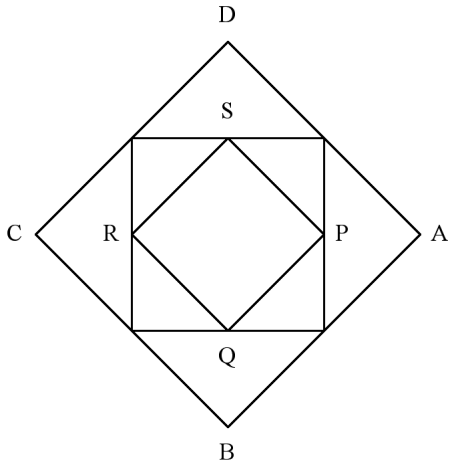
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13. Determine the length of side *s*.
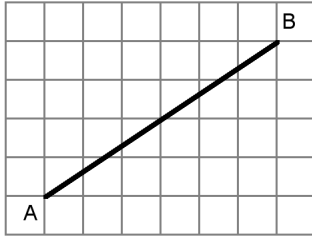

    8.4 cm
    s
    5.2 cm

    .
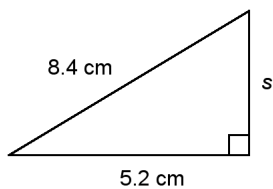
Problem

14. The side length of square PQRS is half the side length of square ABCD.
Square ABCD has area 49 cm².
a) What is the area of square PQRS?
b) What is the length of each side of square PQRS?

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15. On this grid, the side length of each small square represents 0.2 m.
    Determine the length of AB, to the nearest tenth of a metre.

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16. Write these numbers in order from least to greatest. Justify your answer.

$$\sqrt{\frac{14.2}{3}}, \sqrt{\frac{12.7}{4}}, \sqrt{4.1}, \sqrt{3.6}$$

Math 9 Quiz: Sections 1.1 and 1.2 - Perfect and Non-Perfect Squares
Answer Section

SHORT ANSWER

1. ANS:
   0.8

   PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
   LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge

2. ANS:
   24.01

   PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
   LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge

3. ANS:
   ii

   PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
   LOC: 9.N5   TOP: Number   KEY: Conceptual Understanding

4. ANS:
   i and iv

   PTS: 1   DIF: Moderate   REF: 1.1 Square Roots of Perfect Squares
   LOC: 9.N5   TOP: Number   KEY: Conceptual Understanding

5. ANS:
   $\dfrac{7}{8}$

   PTS: 1   DIF: Moderate   REF: 1.1 Square Roots of Perfect Squares
   LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge

6. ANS:
   4, 5

   PTS: 1   DIF: Easy   REF: 1.2 Square Roots of Non-Perfect Squares
   LOC: 9.N6   TOP: Number   KEY: Conceptual Understanding

7. ANS:
   iv

   PTS: 1   DIF: Moderate   REF: 1.2 Square Roots of Non-Perfect Squares
   LOC: 9.N6   TOP: Number   KEY: Conceptual Understanding

8. ANS:
   6.9

   PTS: 1   DIF: Moderate   REF: 1.2 Square Roots of Non-Perfect Squares
   LOC: 9.N6   TOP: Number   KEY: Procedural Knowledge

9. ANS:
7.0 cm

PTS: 1   DIF: Moderate   REF: 1.2 Square Roots of Non-Perfect Squares
LOC: 9.N6   TOP: Number   KEY: Procedural Knowledge

10. ANS:
$$\frac{289}{324}$$

PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge

11. ANS:
a) The length of one side of the garden is $\sqrt{156.25}$ m, or 12.5 m.
b) The perimeter of the garden is 4×12.5 m, or 50 m.

PTS: 1   DIF: Moderate   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge

12. ANS:
144 and 169
$$\sqrt{144} = 12$$
$$\sqrt{169} = 13$$

PTS: 1   DIF: Easy   REF: 1.2 Square Roots of Non-Perfect Squares
LOC: 9.N6   TOP: Number   KEY: Conceptual Understanding

13. ANS:
The length of side s is about 6.6 cm.

PTS: 1   DIF: Moderate   REF: 1.2 Square Roots of Non-Perfect Squares
LOC: 9.N6   TOP: Number   KEY: Procedural Knowledge

PROBLEM

14. ANS:
a) Area of PQRS $= \dfrac{1}{4} \times$ area of ABCD

$$= \frac{1}{4} \times 49 \ \text{cm}^2$$

$$= 12.25 \ \text{cm}^2$$

b) PQ $= \sqrt{12.25}$ cm $= 3.5$ cm

PTS: 1   DIF: Moderate   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Problem-Solving Skills

15. ANS:
   Use the Pythagorean Theorem.
   $$AB^2 = (6 \times 0.2)^2 + (4 \times 0.2)^2$$
   $$= 1.44 + 0.64$$
   $$= 2.08$$
   $$AB = \sqrt{2.08}$$
   $$\doteq 1.4$$
   The length of AB is about 1.4 m.

   PTS: 1   DIF: Difficult   REF: 1.2 Square Roots of Non-Perfect Squares
   LOC: 9.N6   TOP: Number   KEY: Problem-Solving Skills

16. ANS:
   Use the square root function on a calculator.
   $$\sqrt{\frac{14.2}{3}} \doteq 2.2$$
   $$\sqrt{\frac{12.7}{4}} \doteq 1.8$$
   $$\sqrt{4.1} \doteq 2.0$$
   $$\sqrt{3.6} \doteq 1.9$$

   Since $1.8 < 1.9 < 2.0 < 2.2$, from least to greatest: $\sqrt{\frac{12.7}{4}}$, $\sqrt{3.6}$, $\sqrt{4.1}$, $\sqrt{\frac{14.2}{3}}$

   PTS: 1   DIF: Difficult   REF: 1.2 Square Roots of Non-Perfect Squares
   LOC: 9.N6   TOP: Number   KEY: Problem-Solving Skills | Communication